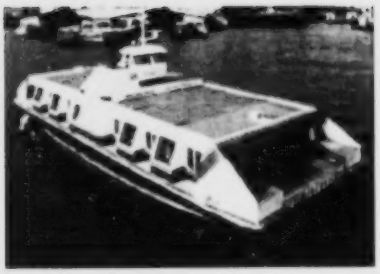
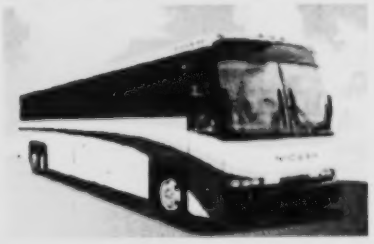




North Shore Area Transit Plan Final Summary Report

December 2000

TRANS LINK

105-00858/

Preface

This summary report is the output of the NORTH SHORE AREA TRANSIT PLAN, a project of TransLink in partnership with the City of North Vancouver, the Districts of North Vancouver and West Vancouver, the Village of Lions Bay, and the Municipality of Bowen Island. The plan identifies specific transit service improvements to be implemented over the next three years (2001 to 2003), and scopes out priorities for years four and five (2004 and 2005). The Area Transit Plan supports TransLink's Strategic Transportation Plan as well as the Official Community Plans and Transportation Plans of the municipalities. The improvements described in this report are however subject to available funding.

TransLink would like to acknowledge the invaluable contribution of the North Shore Public Advisory Committee and Technical Advisory Committee in the development of the NORTH SHORE AREA TRANSIT PLAN. In addition, acknowledgement is extended to Delcan/IBI Group, Context Consulting, and TSI Consulting who provided technical assistance in preparing the Plan.

Members of the Public Advisory Committee:

W. David Brierley
(Committee Chair)
City of North Vancouver,
Member at Large

Gerry Collver
City of North Vancouver,
Member at Large

Michael Burns
District of North Vancouver,
Transit Representative

Alison Page
District of North Vancouver,
Member at Large

John Neumann
District of North Vancouver,
NSDRC Representative

Melanie Clark
District of North Vancouver,
Youth Representative

Julie Cowperthwaite
West Vancouver Municipality,
Youth Representative

Lucille Hoover
West Vancouver Municipality,
Member at Large

Jim Carruthers
West Vancouver Municipality,
Member at Large

Allan Orr
Alternative Member,
TPAC Representative

John Fair
Alternate Member,
Member at Large

Members of the Technical Advisory Committee:

Dragana Mitic
Transportation Planning
Engineer,
City of North Vancouver

Donna Howes
Assistant Manager of
Transportation,
District of North Vancouver

Kevan Delaney
Design Transportation
Technician, City of North
Vancouver

Ken Krueger
Transportation Planning
Technologist,
District of North Vancouver

Tony Lorage
Transit Manager (since retired),
West Vancouver Transit

Gavin Joyce
Manager of Transportation and
Public Works,
District of North Vancouver

Greg Curry
Operations Superintendent,
West Vancouver Transit

Brian Johnston and Kori Grekul
Context Research

Mike McComber
Manager
North Vancouver Transit Centre
Coast Mountain Bus Company

Kevin Perry, and Ken Curry
Delcan Corporation

Steve Hayto and Andy McNally
IBI Group

Bill Lambert, Program Manager,
Project Planning ,TransLink

Gavin Davidson
Service Planner, TransLink

Ken Chow
Service Planner, TransLink

Harjit Sidhu-Kambo
Transportation Engineer,
TransLink

Sheila Hartmann
Manager, Marketing Research,
TransLink

Papers Available

In addition to the Summary Report, the following technical papers are available for distribution.

- North Shore Area Transit Plan – Market Research Report
- North Shore Area Transit Plan – Summary of Public Consultation Input From Open Houses and Workshops
- North Shore Area Plan-Technical Summary
- SeaBus Technical Analysis and Cost-Benefit Paper

Additional Copies and Information

Additional copies of this report and other technical papers can be obtained by contacting:

TransLink
Implementation Planning Department
#1700-4720 Kingsway
Burnaby, BC
V5N 4N2

Tel: (604) 453-4500
Fax: (604) 453-4628
Email: janet_savage@translink.bc.ca

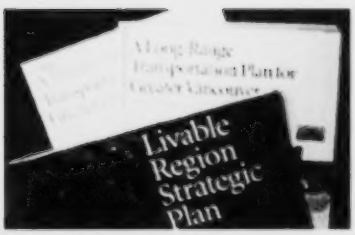
Purpose & Scope

The North Shore is one of seven area transit plans being developed between 1999 and 2002 by TransLink in partnership with the municipalities of the Greater Vancouver Regional District (GVRD). This Plan is the culmination of one year of public consultation and technical activities and embodies a new community-driven approach to developing local transit service plans for the region.

The main objectives of the plan are to:

(i) Identify short-term (1 to 3 years) service improvements and medium term (4 to 5 years) transit service priorities for the North Shore, including both local service improvements within the area and regional services connecting the North Shore to major regional centres; and

(ii) Develop a strategy combining TransLink and municipal efforts for implementing these transit service improvements and related support measures.



The Strategic Transportation Plan calls for an increased bus fleet and broader range of service to increase ridership by 29% by 2005.

The Plan has been developed to support TransLink's Strategic Transportation Plan (STP). The STP establishes the actions that TransLink will take over the next five years to address transportation needs in Greater Vancouver. Respecting transit, the STP proposes a significant ridership increase, such that:

- Transit use will grow by up to 29% by 2005.

To achieve the ridership objective TransLink proposes to:

- Increase the bus fleet by approximately 48% to permit more frequent and less crowded services.

- Provide a more responsive and flexible bus system, offering a broader range of services, including B-Line services, Regional Town Centre connections and Community Shuttles.

The STP requires TransLink to develop community-based Area Transit Plans to identify specific transit improvements within each of seven sub-areas of the region.

1. **Years 2001-2003 Service Improvements** - This phase of the Plan is comprised of additional local and regional service improvements to be implemented in years 1 to 3. **The commitment to implement these improvements is subject to their being approved as part of TransLink's 2001, 2002 and 2003 Program Plans, and available funding.**

There is a strong demand for new direct services between town centres

2. **Years 2004-2005 Service Priorities** – This phase of the Plan is comprised of further local and regional service improvement priorities that could be implemented in years 4 and 5. **The commitment to implementing these improvements is subject to a review of the Plan in three years.**

The Plan recommends specific transit improvements and a timetable for introducing these enhancements. The recommended improvements cover the following areas:

- **Existing Services** - The Plan identifies opportunities to improve SeaBus service (i.e. increased capacity of vessels) and existing road transit services through more frequent service, extended hours of service, route modifications, changes in the type of service (i.e. from City Bus using conventional 40' buses to Community Shuttle using 20 seat minibuses) and upgraded transit equipment and amenities.

- **New Services** - The Plan identifies new bus routes to be implemented, including a new service between Lonsdale Quay and Park Royal via the Pemberton-Fell industrial area, and a direct connection between Capilano College, Phibbs Exchange, Brentwood Town Centre and Burnaby Metrotown.

- **Community Shuttles** –The Plan identifies several new Community Shuttle services, which will use smaller buses operating on both fixed and flexible routes to provide improved service within local neighbourhoods in West Vancouver, the District of North Vancouver and the Village of Lions Bay.

- **Transit Support Measures** - The Plan identifies opportunities for improving bus stops, passenger shelters, bus transfer exchanges, customer information and transit priority measures (such as bus queue jumpers) to support both existing and new transit services. A separate facilities study has reviewed the needs of bus maintenance facilities on the North Shore including the development of additional capacity to provide for the long term service requirements of the North Shore in the next five years.

Process

The Plan was developed in stages during the September 1999 to December 2000 period. A substantial program of public consultation was used to shape the Plan. Public and stakeholder input was gathered from several different activities at key junctures in the process as summarised below.

A Public Advisory Committee, appointed by local councils, played an instrumental role in the development of the Plan, and by providing advice on the public consultation process. Significant assistance in the development of the Plan was also provided by a Technical Advisory Committee composed of staff from each of the municipalities.

Public Consultation. The first series of public sessions, the purpose of which was to gather input on key transit issues facing the North Shore, were held in November 1999 at several locations. These included the Parkgate Mall, the West Vancouver Seniors Centre, and Lonsdale Quay.

The second series of public workshops/meetings were held in March 2000 at the Parkgate and Park Royal Malls, and the North Vancouver Recreational Centre. These sessions were held to present new service concepts to the general public and to solicit feedback on the concepts.

Public input was also gathered through correspondence from North Shore residents to TransLink and/or the municipalities, from a telephone comments line, e-mail and comment forms submitted through TransLink's website.

Market Research - A telephone market research survey was conducted in March and April 2000. The survey gathered statistically valid input from a cross-section of North Shore residents on the following: travel patterns, transit usage, customer satisfaction with service, deterrents to using transit, opinions on some service concepts developed for the Plan, and the potential usage of the service concepts.

Operators' Focus Group - A focus group session was held with a group of transit operators from the Coast Mountain Bus Company (CMBC) and West Vancouver Municipal Transit experienced with operating services in the North Shore to gather feedback on key transit issues and the transit service concepts.

Customer Satisfaction Surveys – On-going surveys of TransLink customers are conducted to determine their expectations and satisfaction levels with key attributes of transit service such as reliability, speed of trips, direct routes/few transfers, frequency, security, etc.

Market Analysis

The North Shore sub-region consists of the City of North Vancouver, the Districts of West Vancouver, and North Vancouver, the Village of Lions Bay and the Municipality of Bowen Island.

The North Shore is characterized by low density development.

The North Shore is characterized as a relatively low density suburban area, though pockets of higher density housing development (over 20 dwelling units per hectare) occur in the Lower Lonsdale area and in Ambleside in West Vancouver. Park Royal Mall, Lonsdale Avenue corridor and Capilano Mall represent major destinations for North Shore trips.

The population of the North Shore area in 1999 was 177,200 people (8.9% of GVRD population) and total employment was approximately 70,500 jobs (7.2% of GVRD employment). By the year 2006, the population of this area is projected to increase by 9,300 people to 186,500 and employment is anticipated to increase by 6,200 jobs to a total of 76,700 jobs. This represents an annual increase of .7% and 1.3% for population and employment in the North Shore, respectively, compared to GVRD averages of 1.5% and 2.3% for population and employment growth. The North Shore is the slowest growth sub-area in the Greater Vancouver Region.

The North Shore is the slowest growth sub-area in the Greater Vancouver Region.

Residential population growth for the North Shore is occurring on the Lonsdale Avenue corridor and, to a lesser extent, east of the Seymour River, in Caulfeild and in the area north of the Upper Levels Highway west of the British Properties. Employment growth is mainly concentrated in Central and Lower Lonsdale and along and south of Marine Drive corridor.

Overall the population on the North Shore tends to be older than the regional average and generally more affluent with higher than average car ownership. North Vancouver City has generally higher densities and lower per capita car ownership and thus achieves higher transit market shares than in the Districts of North Vancouver and West Vancouver.

The North Shore has a higher peak period modal share with 12% of trips using transit, as compared to 11% for the GVRD. Transit usage is highest along the major activity corridors of Marine Drive and

Lonsdale Avenue.

According to the 1996 Journey-to-Work dataset, 79,300 North Shore residents travel to places of work outside of the home. Of that total labour force, 40% travel to work destinations throughout the North Shore. The highest single concentration of North Shore workers, however, is in downtown Vancouver with 20%. Other areas of employment concentration include Uptown Vancouver (Broadway – Cambie to Granville) and Burnaby (including Metrotown and Willingdon/Lougheed areas) each with 4%. The remaining 32% of the North Shore labour force that work outside of the home are dispersed throughout the Region or have no fixed place of work

Downtown Vancouver has the highest market share for commuter trips with 35% travelling by transit. Transit mode share is high for these trips because transit is competitive with the automobile in terms of travel time while parking is scarce and relatively expensive.

Other areas of employment concentration have significantly lower market shares. Less than 10% of commuters travel to destinations within the North Shore, Burnaby and uptown Vancouver by transit. Burnaby in particular has potential for growth in transit ridership since most employment is concentrated along Willingdon Avenue and in Metrotown.

Given the difficulties in accommodating increased automobile traffic over the Burrard Inlet, there is an opportunity to capture an even greater share of travel on transit. This will require expanded capacity, improved service frequency (particularly during shoulder peak periods) and more direct service. Within the North Shore there is potential to capture a greater share of travel along busy travel corridors and within areas where employment and housing development are occurring.

The North Shore is also a major tourist destination. One in six riders on SeaBus is a visitor to the City, while some bus routes that serve the Capilano Road corridor and Grouse Mountain as well as the Horseshoe Bay Ferry terminal carry significant volumes of tourists. The latter facility is located a short distance from downtown Vancouver and is a significant market for transit. Finally, a large number of English as a Second Language (ESL) students stay on the North Shore in homestay programs. The ESL students are significant consumers of transit with over 90% making regular use of the system. The tourist and ESL students tend to increase ridership significantly on SeaBus from May through September, causing the service to exceed capacity on some trips during the peak hour-peak direction.

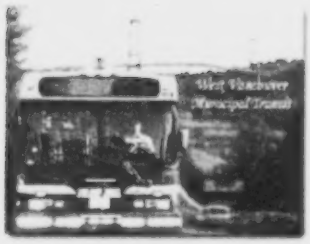
Overall, the land use and travel patterns on the North Shore point to the following needs:

- Improve the high level of transit service to downtown Vancouver and ensure that priority measures at the bridge heads continue to make transit travel times competitive with the automobile;
- Enhance transit services for trips that remain on the North Shore, with key destinations including Marine Drive and Lonsdale Avenue corridors and Capilano College; and
- Enhance connections between the North Shore and areas such as the Burnaby Willingdon Avenue corridor and the Broadway corridor.

Transit Issues

North Shore transit services enjoy the highest customer satisfaction ratings in the region.

The North Shore transit system is bus-based and includes regional services, cross-town and local services, in addition to the SeaBus passenger ferry. The system is designed around the three transit hubs of Phibbs Exchange, Lonsdale Quay and the Park Royal Mall. The service is delivered by three operating companies and enjoys the highest customer satisfaction ratings in the region.



The West Vancouver Blue bus service is the oldest continuously operated municipal transit system in North America. It now operates as a contractor to TransLink, and serves the District of West Vancouver and Lions Bay. In 1999, it began operating the new crosstown route from Dundarave to Lynn Valley Centre on the North Shore.

Coast Mountain Bus Company, a subsidiary of TransLink, operates bus and SeaBus services in North Vancouver City and District. Finally Bowen Island Community Transit provides local minibus service on Bowen Island.

The performance of the existing transit system was analysed using several sources of information including a comprehensive passenger boardings survey undertaken during the fall of 1999 and spring 2000. The best performing routes are on Marine Drive, 15th Street and Lonsdale Avenue. The worst performing routes are in east North Vancouver, and lower density areas of West Vancouver. The Area Plan recommends replacing some of these services with Community Shuttles. Other poor performing services are recommended to be combined with more productive services (e.g. #215 with #232).

Key transit issues were identified through public consultation. They include the need to provide:

Local Services

- More frequency and service capacity is needed to reduce overcrowding and better serve activity and employment centres along major travel corridors in the North Shore.

- Improved transit service to growing employment areas such as Pemberton-Fell.
- Improved transit service to under-served and growing residential communities such as Panorama Village, Woodcroft Estates and areas east of Seymour River.
- More accessible and community friendly service using community shuttles to provide service in local neighbourhoods.
- Improved service to major schools such as Capilano College.
- More late evening and weekend service.
- Direct service to more local destinations without transfers.

On narrow local streets Community Shuttle service would be more appropriate than the standard bus shown here.

Regional Services

- New or improved direct services to Vancouver and Burnaby.
- Improved connections to major regional activity centres such as BCIT, UBC, SFU, the Vancouver International Airport and the Horseshoe Bay and Tsawwassen ferry terminals.
- More capacity and/or more frequency on SeaBus and improved connecting bus services.
- More comfort and additional capacity on longer distance express buses, such as services that go from the Horseshoe Bay ferry terminal to downtown Vancouver.
- A new depot for buses on the North Shore, as the North Vancouver depot is at capacity and the West Vancouver depot cannot accommodate all of the future North Shore service needs.

North Vancouver depot is at capacity.

Transit Support Measures

- Transit priority measures such as queue jumpers, bus lanes and transit signal priorities at key congestion points along major roadways (i.e. Marine Drive, Lions Gate and Second Narrows Bridges) to improve the speed and reliability of transit services.

An extended queue jumper at Lions Gate Bridge would improve the speed and reliability of southbound buses.

Transit customers desire more shelters and improved schedule information and lighting at bus stops

- More shelters and schedule information (i.e. InfoTubes), improved pedestrian linkages to bus stops, and better lighting at bus stops to improve the overall environment for customers using transit services.
- An expanded Park and Ride facility at Phibbs Exchange.
- An increased number of bus stops that are accessible to persons in wheelchairs.
- Bike racks on North Vancouver buses (West Vancouver buses are already 100% lift equipped).

The Phibbs Exchange Park and Ride facility is at capacity.

Bus Operating and Maintenance Facilities

Bus service on the North Shore is operated from the following operating centres:

i) The West Vancouver operating centre located in the District of North Vancouver on Lloyd Avenue, which has a design capacity for 50 40' buses and currently has 38 buses;

ii) The North Vancouver depot located in the City of North Vancouver on Third Street which has a design capacity of 60 buses and currently has 92 buses;

iii) Burnaby operating centre located in the City of Burnaby on Kitchener Street east of Boundary Road which has a design capacity of 222 buses and currently has 193 buses; and

iv) On Bowen Island 3 buses are stored at the facility used for the Community Shuttle service.

TransLink has recently examined the need for new and expanded transit operating centres in response to the transit service improvements promised within the 5-year Strategic Transportation Plan, and reached the following conclusions which are pertinent to the North Shore Area Plan:

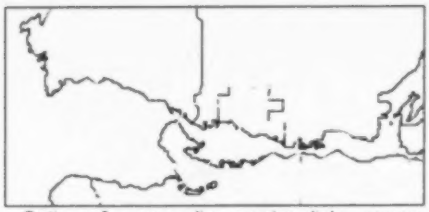
i) The recommended service improvements in the North Shore Area Plan for the next three years will not be constrained by operating centre space. These improvements can be operated either out of the West Vancouver operating centre and/or the Burnaby operating centre. Operating transit services for the North Shore from the Burnaby operating centre across the Second Narrows Bridge does not present a problem for reliability of services. Existing services are operated throughout the Region which must cross bridges/tunnels and their

reliability is not impacted.

ii) The West Vancouver depot can be expanded to provide a portion of the capacity needed to serve the long term transit requirements of the North Shore.

iii) Additional capacity will be made available to provide for the long term service requirements of the North Shore within the next five years.

Marine Services



Options for expanding marine links across Burrard inlet have been examined as part of the Area Plan.

The North Shore is separated from the rest of the Lower Mainland by Burrard Inlet. Traffic congestion delays on the bridge crossings occur regularly. SeaBus service by contrast is very reliable (99.9% January to October 2000) and has enjoyed consistently high customer satisfaction ratings since its inception in 1977. Options for expanding and increasing the marine links between the North Shore and Vancouver have thus been examined as part of the Area Plan process.

Potential New Marine Connections

In 1995 BC Transit commissioned Sandwell Inc. to examine potential marine connections between the North Shore and Vancouver.

Nine routes were considered initially, linking the municipalities on the North Shore to various points between UBC and downtown Vancouver. The assessment was based on passenger demand, travel time, vehicle technology and terminal/infrastructure requirements and costs.

Three alternatives were studied in more detail, having met the initial thresholds of the evaluation criteria. Downtown Vancouver (Waterfront Station) was the southern terminus for each of the routes while Ambleside, Capilano and Seymour (Maplewood) were the respective northern terminals for the routes. The table below summarizes advantages, disadvantages and net costs per passenger for the options from the 1995 study.

Summary of Short-Listed Marine Alternatives			
Alternative	**Ambleside**	**Capilano**	**Seymour (Maplewood)**
Advantages	Close to population and existing transit.	Limited impacts on surrounding areas.	Area with high potential growth; may offer reduction in travel time compared to existing bus service.
Disadvantages	Not time competitive with buses.	Remote location, not time competitive with buses.	Location currently isolated; High capital costs for terminal.
Net Cost ($/passenger)	$4.43	$4.71	$3.40

The report concluded that none of the short-listed alternatives were financially feasible as the cost recovery factors for each option were less than 35% while existing bus services for the North Shore average approximately 43%. Only one option- Seymour (Maplewood) resulted in net increase in transit ridership, (albeit at a higher cost). The cost of any proposed marine alternative would thus remain high when compared with improving bus service between North Shore and downtown Vancouver.

A review of the assumptions used in the initial report indicates that no significant changes have occurred that would alter the outcome of the analysis. Most important to the analysis were the ridership forecasts that were linked to population growth within the North Shore and specifically within close proximity to ferry terminals.

As recent and projected population growth remains consistent with the assumptions made in the initial report, the forecasted ridership is compatible with current circumstances.

Housing growth is, however, projected to occur east of Seymour River and significant employment growth is planned for the CanOxy site during the medium term (five to ten years). These increases could make the Seymour option more cost effective. However, because these increases will occur outside of the time frame for the Area Plan, the financial evaluation of the marine options and the findings of the report remain valid within the framework of the North Shore Area Plan. This issue will be re-examined in 2003.

SeaBus offers competitive travel times for Lonsdale-Vancouver travel. Many Lonsdale residents can walk to the SeaBus. SeaBus currently carries over 15,000 passengers per day.

Over the next three years, TransLink proposes to examine the potential for new ferry services where they are more cost effective that road-based alternatives. For example, the use of smaller ferries (capacities of less than 100 persons) may have potential for markets such as Bowen Island to downtown Vancouver and even Deep Cove to downtown. Smaller ferries would help to minimize operating and infrastructure costs.

SeaBus Analysis

The SeaBus passenger ferry service is comprised of two vessels, each of which carries up to 400 passengers. These vessels provide a 15-minute service frequency between Lonsdale Quay in North Vancouver and Waterfront Station in downtown Vancouver.

Introduced in June 1977, the two catamaran ferries are an integral part of the public transit system in the Vancouver region.

In general, ridership on SeaBus is well within capacity levels, except for a few peak direction-peak period sailings. However, ridership has fluctuated over the past years in response to bridge closures, gas prices and changes in the number of students and tourists travelling to and from the North Shore.

SeaBus sailings rarely operate at capacity levels. The table below indicates that in 1999, nearly 88% of all sailings carried less than 50% of the vessel's capacity, and only 2.3% operated at 75% or higher capacity. However, selected trips during the peak hour-peak direction exceed capacity (a lock-out).

SeaBus Ridership					
#Passengers per sailing	% of Total Sailings				
	1995	1996	1997	1998	1999
less than 51	15.1	11.9	10.7	11.6	11.8
51-101	33.8	29.0	28.0	32.4	32.3
101-150	27.9	28.7	30.2	28.8	29
151-200	12.6	14.7	16.1	14.7	14.5
201-250	6.7	8.3	7.8	6.9	6.6
251-300	2.6	4.3	4.1	3.5	3.5
301-350	0.9	1.9	2.1	1.6	1.6
351-400	0.3	1.3	1.0	0.5	0.7

In 1999, lock-out sailings occurred at a rate of only 0.2%, or 102 times out of over 41,000 sailings. Over the past few years, this statistic has ranged from less than 0.1% in 1995 to 0.7% in 1996. Between January 1 and November 30, 2000 the number of lockouts climbed to 281. Yet this still represents only .86% of all sailings. The number of sailings that are at capacity thus remains relatively low.

There are a number of trends that could influence SeaBus peak ridership over the coming years, including:

- Growth in the number of English as a Second Language (ESL) students staying in North Vancouver and travelling to downtown by transit;
- Population growth occurring in the Lower Lonsdale area;
- A continued increase in the number of tourists visiting the Vancouver area; and
- Economic and employment growth in North Vancouver

and in downtown Vancouver.

Based on the above factors an optimistic annual ridership growth rate of 2% is assumed. If ridership increases at the projected rate, peak hour-peak direction ridership will reach 100% of capacity by 2008. There are a number of options for increasing capacity including:

1. Removing 33 seats and providing leaning rails for standees thus increasing capacity to 492 passengers;
2. Increasing SeaBus frequencies to 12 minutes during peak periods;
3. Addition of a third vessel.

The following table identifies the estimated costs associated with each option.

Comparison of Alternatives to Increase Seabus Service Capacity

Alternative	Peak Hour Passenger Capacity (% increase)	Capital Cost*	Incremental Annual Operating Cost**
1. Increase vessel capacity	1,968 (23%)	$200,000	$0.5 million
2. Increase service frequency	2,000 (25%)	$0	$1.3 million
3. Purchase a third vessel	2,400 (50%)	$18,000,000	$2 million

* Capital costs exclude annual debt serving.

** Includes incremental operating costs for SeaBus and all connecting North Shore buses.

All three options will allow for the variability in demand exhibited over recent years during peak periods and special events. Increasing the vessel capacity has the lowest capital and incremental operating costs and will allow enough capacity to accommodate anticipated peak period-peak direction travel for at least the next 10 years. Moreover, a limited number of passengers will be obliged to stand after the removal of seats since the vessels carry over 360 passengers on less than 2% of all trips. Service quality will thus remain high.

Increasing vessel capacity by removing 33 seats and adding leaning rails to accommodate 492 passengers is therefore the recommended option and will be undertaken in 2001.

Options for increasing capacity will be re-examined in three years taking into consideration reliability of these ageing vessels and actual ridership growth.

Capilano College

Expand Key Markets

From an analysis of the market and land use information, and the transit issues identified by the public, the focus of the North Shore Area Transit Plan service concepts was placed on generating new ridership to and from the following key areas, in order of priority:

Key transit markets are where there are concentrations of employment and population as well as post – secondary schools (i.e. UBC, SFU, BCIT and Capilano College)

Primary – Regional

- Trips between the North Shore and downtown Vancouver;

Secondary – Local

- Trips to activity and employment centres along major travel corridors such as Marine Drive and Lonsdale Avenue; and
- Trips to/from growing and under-served employment and residential areas such as Pemberton/Fell industrial area and Lower Lonsdale.

Service Concepts Considered & Evaluation Criteria

A number of local and regional service concepts were examined which addressed transit issues identified in the Plan. These concepts include:

i) New regional service connections from:

- Capilano College/Phibbs Exchange to Brentwood Town Centre and Metrotown in Burnaby
- North Vancouver to UBC
- Horseshoe Bay to Lonsdale Quay and Brentwood Town Centre in Burnaby
- Horseshoe Bay to bus and rail terminals at Pacific Central Station in Vancouver
- Lynn Valley to the Central Broadway area in Vancouver
- Waterfront Station in Vancouver to UBC

ii) New local services including:

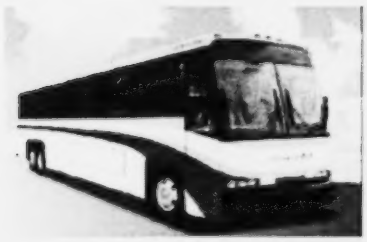
- Community Shuttle services to serve some local neighbourhoods such as Caulfeild/Lions Bay; British Properties and Panorama Village; the Mount Seymour Parkway area, Lynn Valley; Woodcroft and Cedardale
- A new route connecting Lonsdale Quay to Park Royal via Pemberton/Fell industrial area
- A new cross-town service between Park Royal, Capilano College and Parkgate Mall via Keith Road
- Direct connections between the Deep Cove Area and Grouse Mountain

***City Bus** – the majority of bus service providing core local services throughout the region*

iii) Improvements to existing local and regional services where current or projected demand warrants increased capacity or frequency.

These concepts used one of the following brands in the family of bus services offered by TransLink:

i) **City Bus -** the majority of bus service providing core local services throughout the region and limited stop services on select corridors; and



***Express Bus** – services using higher capacity highway coaches and operating generally long distances on highways*

B-Line Bus *– higher capacity buses operated in high demand corridors*

ii) **Express Bus** – services using higher capacity highway coaches and operating over long distances on highways between suburban areas and downtown Vancouver or other major town centres;

iii) **B-Line Bus** – higher capacity buses operating in high demand corridors;

iv) **Community Shuttle** – fixed route and fixed schedule or demand responsive services, which provide a high degree of accessibility for local trips using smaller vehicles and providing connections to other bus services.

Community Shuttle *– fixed route and fixed schedule or demand responsive services using smaller vehicles*

The service concepts were evaluated using the criteria shown in the table below. This evaluation process, conducted jointly by TransLink and municipal staff with input from the Public Advisory Committee, led to the development of preferred service concepts and their timing.

Criteria Used to Evaluate Service Concepts

Performance Criteria	Stakeholder Criteria
• **Ridership** - Number of new transit users in a.m. peak hours - Daily Ridership - Productivity (average passenger load) • **Costs** - Buses required - Annual total cost - Cost per new boarding - Cost per boarding • **Marketing Research** (potential usage)	• **Mobility** - End-to-end travel time saving - Transfers eliminated - Service coverage • **Community Issues** - Public Input - Community linkages • **Implementation Considerations** - Consistency with the Strategic Transportation Plan - Need for staging and new infrastructure

Service on Lonsdale Avenue will be improved.

Recommended Plan

The Area Transit Plan has identified proposed improvements to existing services and new services that should be implemented within the next three years (i.e. 2001-2003), as well as further transit service priorities for the future (i.e. 2004-2005) as part of next update of the plan. These improvements would address many of the existing issues identified by the general public and other stakeholders throughout the development of the ATP (see attached maps).

These improvements will increase the total number of bus service hours by 20%, while annual ridership will increase by an estimated 12%. The targeted cost per new ride of $4.45 (versus 2000 average cost per transit trip on the North Shore of $3.85) is moderate. This, combined with the fact that the North Shore transit system cost recovery will drop by only 1% from 43% to 42% indicates that the plan will be reasonably cost-effective overall. These improvements will make a significant contribution towards achieving the Strategic Transportation Plan mode share objectives.

Phase 1- (2001, 2002 and 2003) – Recommended Service Improvements

It is recommended Year 1 (2001) include the implementation of the following services:

SeaBus capacity will be increased.

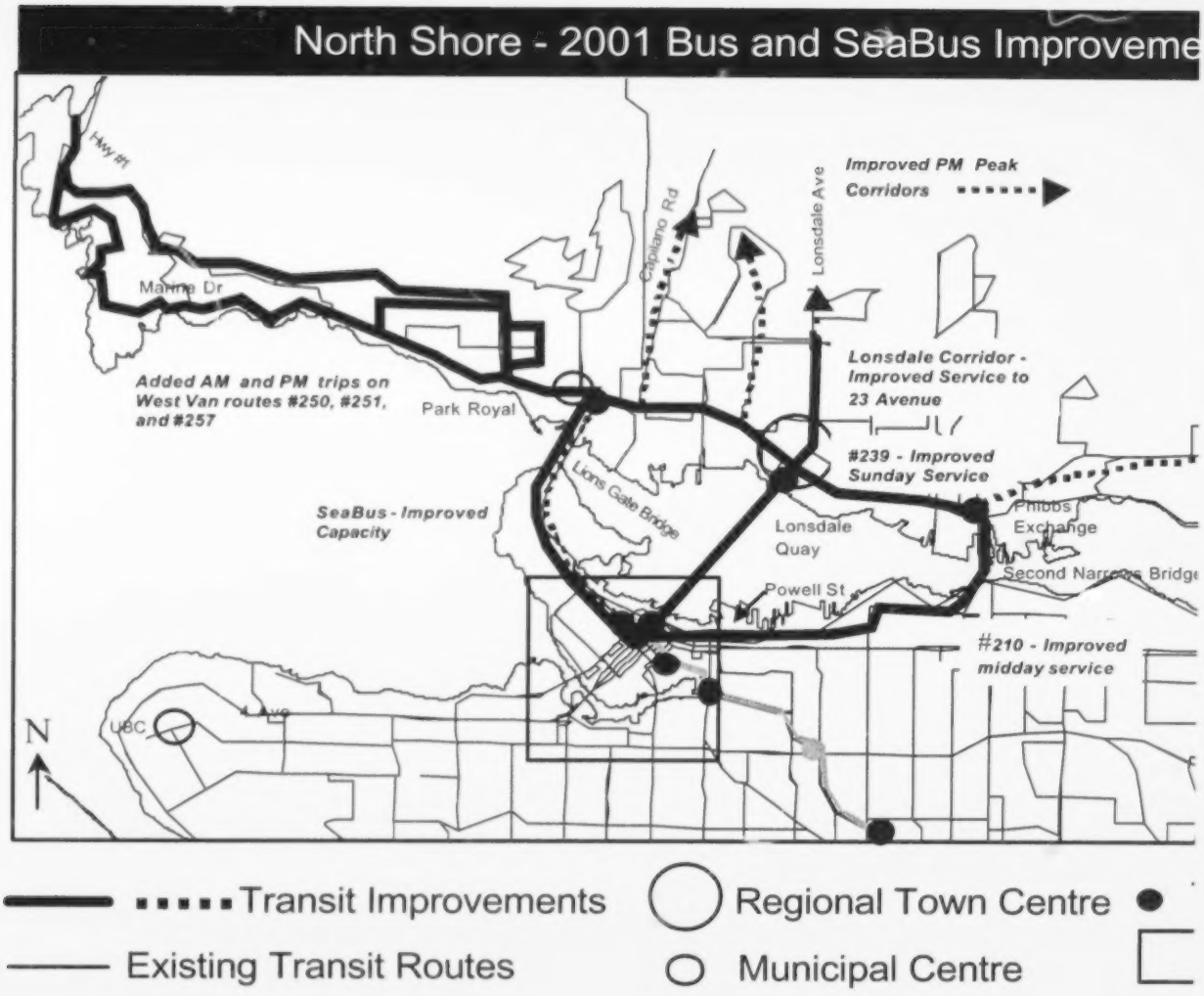
- **Improve PM peak service on North Shore routes:** To reduce crowding and to attract a greater portion of the commuter market travelling to and from downtown Vancouver, additional trips will be provided on numerous routes between downtown Vancouver and the North Shore during the shoulder PM peak, including #210, #211, #214, #241, #246, #247 and #290. These improvements will carry an additional 29,000 new riders annually.

- **Improve midday service between North Vancouver and downtown Vancouver via Second Narrows Bridge:** To address an overcrowding situation service frequency on #210 between Phibbs Exchange and downtown Vancouver will be increased from every 30 minutes to every 15 minutes during the

midday on weekdays (deferred from December 2000).

- **Improvements on various West Vancouver routes to address peak period crowding and school trips:** To address peak period overcrowding, two trips will be added to #250 between downtown and Horseshoe Bay in the AM peak and a trip will be added to the #257 express service between downtown and Horseshoe Bay in the AM and PM peaks. To improve service to West Vancouver schools in the morning, an extra trip will be added to #251 Vancouver/Queens service during the AM peak.

- **Improve peak and off-peak capacity service along Lonsdale Avenue:** Lonsdale Avenue is a major commercial and business corridor that also connects with SeaBus. Service will be increased during the morning peak and daytime in order to reduce crowding along the corridor. This will carry an additional 17,000 new riders annually.


North Shore - 2001 Bus and SeaBus Improveme
Hwy #1
Marine Dr
Capilano Rd
Lonsdale Ave
Improved PM Peak Corridors
Lonsdale Corridor - Improved Service to 23 Avenue
Added AM and PM trips on West Van routes #250, #251, and #257
Park Royal
#239 - Improved Sunday Service
Lions Gate Bridge
SeaBus - Improved Capacity
Lonsdale Quay
Phibbs Exchange
Second Narrows Bridge
Powell St
#210 - Improved midday service
UBC
N
Transit Improvements
Existing Transit Routes
Regional Town Centre
Municipal Centre

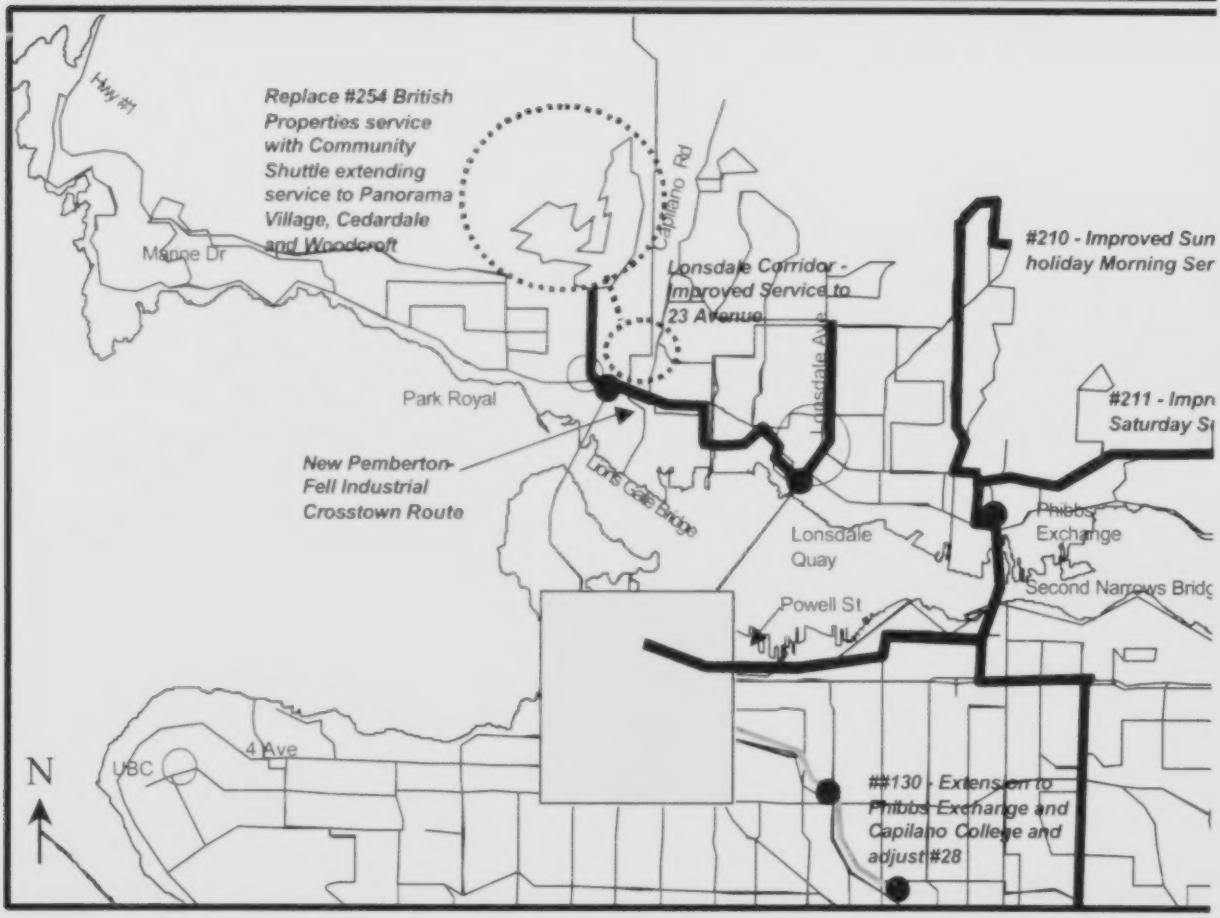
- **Increase Sunday service along Marine Drive:** Marine Drive is a major commercial corridor. In order to reduce overcrowding on existing buses route #239 Sunday service operating along Marine Drive during the daytime will be doubled from 30 minutes to every 15 minutes. This will carry an additional 12,000 new riders annually.
- **Increase capacity of SeaBus:** To address crowding conditions and occasional lock-outs, the capacity of the SeaBus vessels will be increased from 400 to 492 passengers by removing 33 seats and replacing them with leaning rails. This will carry an additional 23,000 new riders annually.

It is recommended Year 2 (2002) include the implementation of the following services:

- **Introduce a new service from Metrotown and Brentwood Town Centre to Phibbs Exchange/Capilano College by extending #130 service.** Service would operate frequently in peak periods and every 15 minutes in the daytime.
- **Provide a new peak hour service to the Pemberton/Fell area** to serve the growing number of businesses (30-minute frequency using 40' buses).
- **Improve off-peak and PM peak capacity along Lonsdale Avenue:** Service will be increased during the evening peak and daytime to reduce crowding along the corridor.
- **Increase Saturday morning service to the area east of Seymour River** by improving frequencies on route #211 from 60 to 30 minutes.
- **Provide earlier Sunday and holiday service to downtown Vancouver:** over the Second Narrows from North Shore on #210 before SeaBus service begins at 8:00 AM.
- **Implement Community Shuttle service in West Vancouver and the District of North Vancouver** to serve British Properties and Panorama Village, Park Royal, Woodcroft apartment complex on Fullerton Avenue and perhaps Cedardale neighbourhood east of Taylor Way. Replace existing #254 British Properties service.

Community shuttle service will be implemented in West Vancouver and in the District of North Vancouver

North Shore - 2002 Bus Improvements


Hwy #1
Replace #254 British Properties service with Community Shuttle extending service to Panorama Village, Cedardale and Woodcroft
Capilano Rd
Marine Dr
Lonsdale Corridor - Improved Service to 23 Avenue
#210 - Improved Sun holiday Morning Ser
Lonsdale Ave
Park Royal
#211 - Impr Saturday S
New Pemberton-Fell Industrial Crosstown Route
Lions Gate Bridge
Phibbs Exchange
Lonsdale Quay
Second Narrows Brid
Powell St
4 Ave
UBC
N
##130 - Extension to Phibbs Exchange and Capilano College and adjust #28
Transit Improvements
West Coast Express / SkyTrain
Regional Town Centre
Existing Transit Routes
Municipal Centre / Major Institution

It is recommended Year 3 (2003) include the implementation of the following services:

- **Increase service on route #257 Horseshoe Bay to downtown Vancouver using higher capacity buses** to provide additional capacity and higher quality service.
- **Increase service on North Shore routes travelling into downtown Vancouver such as #240** to ensure that travel times and frequencies during peak periods continue to make transit competitive with the automobile for commuter trips.
- **Provide a direct connection between the Mount Seymour Parkway and Grouse Mountain** via Lonsdale Avenue corridor by connecting #215 to #232.
- **Provide off-peak Bowen Island Community Shuttle service** to complement existing peak service
- **Introduce a Community Shuttle service linking Lions Bay and the Caulfeild area of West Vancouver** to provide improved and more accessible service.
- **Introduce a Community Shuttle east of Seymour River** to provide more frequent and improved service to neighbourhoods along Old Dollarton Highway and in Deep Cove and as a replacement for the current #212 service.

A direct connection will be provided between Grouse Mountain and Mount Seymour Parkway

North Shore - 2003 Bus Improvements
Community Shuttle - new Lions Bay - Horseshoe Bay - Caulfeild Service
Hwy #1
#257 - Improved Service Horseshoe Bay - Downtown Vancouver
Marine Dr
Grouse Mountain - Parkgate Mall Crosstown (#232 and #215)
Capilano Rd
Lonsdale Ave
Seymour -Deep
Community Shu
Dollarton Hwy
15 St
Community Shuttle - Improved Bowen Island Service
Park Royal
#240 - Improved Service North Vancouver (Grand Blvd) - Downtown Vancouver
Lions Gate Bridge
Lonsdale Quay
Phibbs Exchange
Second Narrows Bridg
Powell St
#210 - Improved Service Phibbs Exchange - Downtown Vancouver
4 Ave
UBC
N
Transit Improvements
Existing Transit Routes
West Coast Express / SkyTrain
Regional Town Centre
Municipal Centre / Major Institution

Phase 2 - (2004 and 2005) – Tentative Priorities and Subject to 3 year Review of Area Plan

Years 4 and 5 may include the following transit service priorities:

A direct service between Park Royal, Capilano College and Parkgate Mall has been identified as a priority.

- **Increase capacity of service along Marine Drive** between Park Royal Mall and Phibbs Exchange on route #239 by adding articulated buses.
- **Provide a direct peak hour service between Park Royal Mall, Capilano College and Parkgate Mall via Keith Road** to better serve students travelling to Capilano College and for those travelling to Lonsdale corridor from Mount Seymour Parkway.
- **Extend #257 to Pacific Central Station at 1st and Main** to provide a direct connection from Horseshoe Bay ferry terminal.

The exact phasing and nature of the service initiatives listed in Phase 2 above is not specified as a review of the ATP will be undertaken in three years. These service ideas will be reviewed as part this Area Plan update.

The District of North Vancouver and TransLink will examine options available to improve the queue jumper on Mountain Highway.

Roles of the Municipality and TransLink in Terms of Support Measures

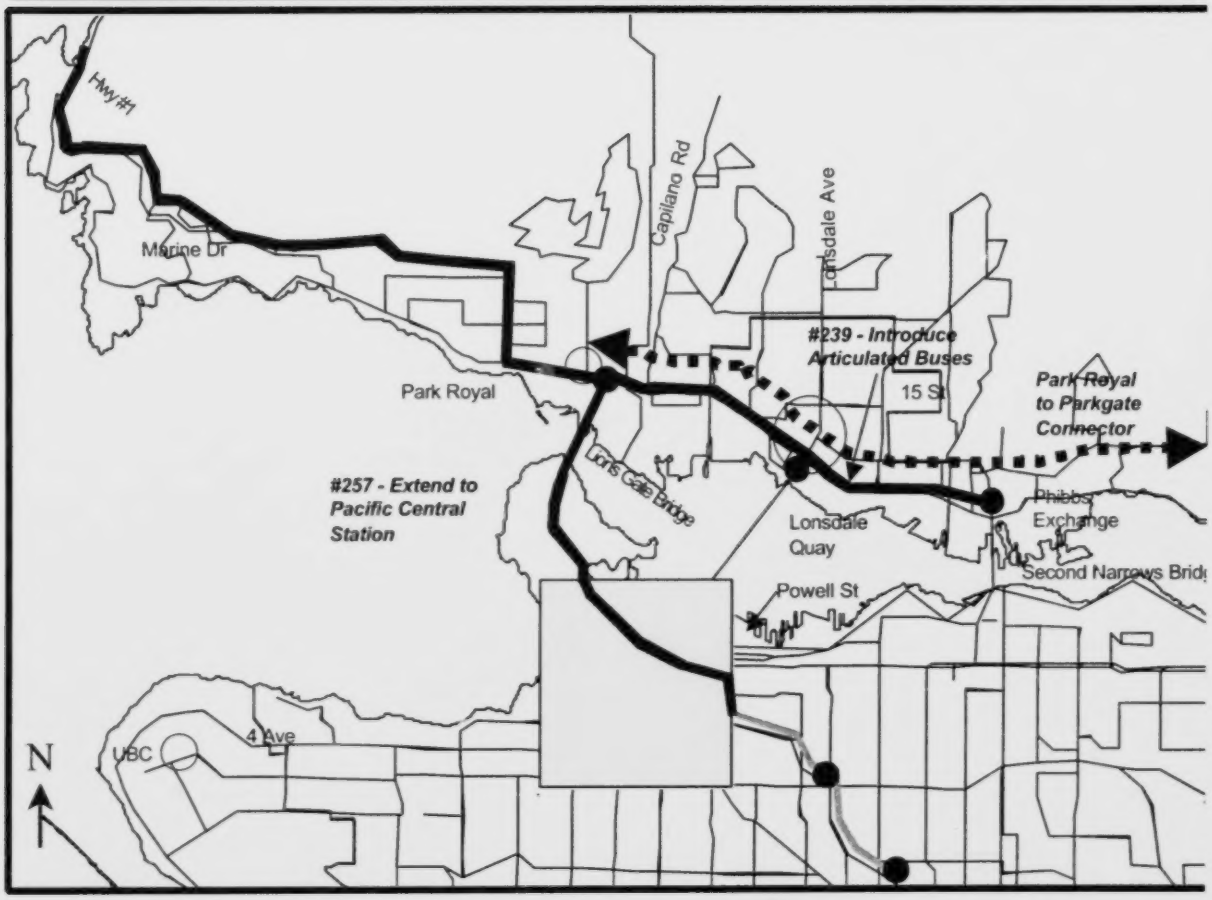
The customer's trip starts when he or she decides to make a trip. To support and assist in the success of the recommended transit service improvements, the municipalities of the North Shore and TransLink have the following roles to play in terms of implementing support measures.

North Vancouver District and City, West Vancouver District, Village of Lions Bay, Bowen Island Municipality

The municipalities in the North Shore have significant roles to play in ensuring the success of the ATP. The municipalities have a role in promoting the use of transit and discouraging travel by single-occupant vehicles in the following ways:

- **Land Use Measures** – Encourage the use of transit by designating medium- to high-density mixed-use zones within the municipalities that act as focal points for transit services.
- **Community and Site Design** – Municipalities can regulate community and site design by establishing urban design guidelines. These guidelines can encourage transit use by requiring site layouts that favour transit services and provide for good pedestrian and cycling connections.

North Shore - 2004-2005 Bus Priorities



Construction of higher density development in Lonsdale corridor

Expand Phibbs Exchange Park and Ride

- **Road Improvements -** The municipalities can continue to make improvements to their road network to enable service to be provided to new areas and ensure safe operating conditions for buses.

- **Transit Facilities** – The municipalities have a role to play in the provision of transit supportive facilities by working with TransLink and other roadway agencies (i.e. Ministry of Transportation and Highways), to do the following:

  - Provide transit priority measures on the road network (i.e. queue jumpers, bus lanes and transit signal priority at key congestion points) to improve the reliability of transit services; and
  - Improve passenger amenities (i.e. provide more and larger shelters, make more stops accessible to customers using wheelchairs, improve lighting, telephones and pedestrian linkages to bus stops) to improve safety and the overall environment for customers using transit.

- **Parking Management Strategies** – Implement parking management strategies in the municipal town centres (i.e. more pay parking in the town centres) to encourage transit use; and

- **Dedicated Annual Funding -** The municipalities can greatly assist in this support role by dedicating funds annually in its capital budget to perform the improvements described above.

The plan has identified a number of specific improvements to roadway geometry, traffic signals, bus stops and transit exchanges that are operationally required before some of the recommended service improvements can be implemented. The plan has further identified a set of transit support infrastructure improvements (i.e. transit priorities) that are desirable to improve the operation and efficiency of bus services and passenger comfort. These can be introduced during the course of the Area Plan as TransLink, municipal and other agency resources allow (see table next page).

TransLink

- TransLink also has a key role to play including:

  - **Monitoring** – TransLink has proposed transit market share and ridership targets for the North Shore area as well as customer satisfaction targets (i.e. improvements in ratings for factors such as frequency) to measure the success of the plan over time. These targets will be monitored and annual reports will be sent to the TransLink Board. Adjustments and fine-tuning to

the market share and ridership targets may be required when information from the 1999 Trip Diary Study is finalized. Adjustments to the level of investment and to specific services may be required, based upon these monitoring results.

- **Scheduling Information** – TransLink will install 120 – 150 new information tubes by the end of 2003.

- **Bicycle Facilities** – TransLink will equip an increasing proportion of the buses with bike racks. By 2005 all buses operating North Shore will have bike racks. TransLink will work with the municipalities to identify key locations for bicycle lockers.

- **Transit Facilities** – TransLink has a role to play in the provision of transit supportive facilities. TransLink will upgrade transit exchanges and other transit facilities (i.e. park and ride lots) required to support the planned service improvements and will provide cost sharing toward transit priority measures on the road network. Key transit service corridors for which transit priority measures should be reviewed and other transit infrastructure which should be examined include:

NORTH SHORE AREA PLAN
INFRASTRUCTURE IMPROVEMENTS *

Location	Problem	Solution	Who is responsible	Estimated Cost Study/Infrastructure	
1. Lonsdale Ave. (Esplanade - 23rd Ave.)	Transit delay and reliability	Passive bus signal priority system and bus bulges	C of NV, TransLink BCTFA	Implementation cost	$178,000
2. Marine Dr. (MacKay – Bewicke)	Congestion during the peak periods	Transit Priority Measures such bus signal priority, etc.	BCTFA, C of NV, TransLink	Functional study and detailed design	$300,000
3. Marine Dr. (Pemberton to Lion's Gate Bridge)	Congestion during the peak periods	Functional Study to determine transit priority scheme + implementation	BCTFA, DNV, TransLink	Functional study and detailed design	$180,000 + Implement ation
4. Mountain Hwy. (Keith-Oxford)	Congestion delays buses entering Phibbs Exchange	Functional Study for bus priority measures + implementation	BCTFA DNV, TransLink	Functional study and detailed design	$90,000 + Implement ation
5. Riverside Dr. (Mt Seymour-Dollarton)	Intersection delays	Bus priority measures to access Dollarton Bridge	BCTFA DNV, TransLink	Functional study and detailed design	$100,000
6. Capilano Rd. (Hwy 1-Marine)	Congestion during peak periods	Functional Study for bus queue jump options + Implementation	BCTFA DNV, TransLink	Functional study and detailed design	$90,000 + Implement ation
7. Cotton Rd./Main St. (Low Level-Mountain Hwy.)	Congestion to Second Narrows blocks access to Mountain Hwy	Functional Study to determine transit priority scheme + Implementation	BCTFA DNV, TransLink	Functional study and detailed design	$100,000 + Implement ation
8. Marine Dr. (Taylor Way-Lions Gate)	Delays on approach to Lions Gate	Functional Study to determine transit priority scheme + Implementation	BCTFA DWV, TransLink	Functional study and detailed design	$20,000 + Implement ation
9. Capilano River (Woodcroft-Cedardale)	No local bus access between North Vancouver District and West Vancouver	Connect Keith Rd and Fullerton Ave.	DNV, DWV	Feasibility study	$60,000 + Implement ation
10. Panorama Ridge	Lack of turn-around facility at the end of Folkestone Way	Connect Folkestone Way with Chippendale Way	DWV	Feasibility Study	$60,000 + Implement ation
11. Chippendale Dr., Westhill Dr.	Deficient travel lane width	Parking ban on one side of street	DWV	Implementation	$10,000
12. Folkestone Way	Deficient travel lane width	Parking ban on one side of street	DWV	Implementation	$10,000

* This table includes transit priority measures and roadway extension projects only.

Resource Requirements and Performance Targets

Resource Requirements

TransLink will make a significant investment to achieve the ridership objectives for the North Shore. As shown in the table below, the improvements will require the following additional resources by the end of the year 2003:

To achieve the ridership objectives, the Area Plan recommends adding 16 more peak hour buses (14% increase) and 76,000 more service hours (21% increase) over the next 3 years

- Expanded SeaBus capacity (20% increase);
- 16 more peak buses (14% increase);
- 76,000 more annual bus service hours (21% increase); and
- An additional bus annual operating and vehicle debt service cost of $5.2 million from $38.5 million in 2000 to $43.7 million in 2003 (14% increase).

TransLink has applied the regional transportation model to develop transit ridership and mode share projections for the North Shore in the year 2003, based on a transportation network that includes the regional and local transit service improvements in the first three years of the North Shore ATP and improvements made in 2000. The ridership and mode split targets are shown in the following table. Key targets to be achieved by the plan before the end of 2003 are:

- Attracting 840 more transit trips to, from and within North Shore in the AM peak hour;
- Increasing the total number of transit trips made annually to, from and within the North Shore from 10 million to 11.2 million;
- Increasing transit's share of trips during the AM peak hour to Burnaby Metrotown from 6.3% to 8.8%.
- Increasing transit's share of trips to downtown Vancouver during the AM peak hour from 34.9% to 35.8%.

The Strategic Transportation Plan established the following longer term targets for North Shore transit service:

- Increase AM peak hour transit trips originating in North Shore from 4,850 in 1999 to 5,600 in 2005 (a 15% increase); and

- Increase transit's share of trips originating in North Shore during the AM peak hour from 10.1% in 1999 to 11.8% in 2005 (a 17% increase).

The model results indicate that the Area Plan service improvements made by 2003 would achieve 49% of the ridership increase targeted in the STP for trips from the North Shore during the AM peak hour, 2005. Considering that only 25 percent of the Area Plan improvements will target the AM peak period, the recommended plan is consistent with the STP longer term targets.

North Shore Area Transit Plan - Resource Requirements & Ridership Targets	Current Service (2000)	End of 2003 with North Shore Area	% Change
1 RESOURCES			
Annual Service Hours*	367,593	443,551	21%
Peak Buses	112	128	14%
Total Buses	133	160	20%
Annual Total Cost-Buses Only ($ millions)**	$ 38.5	$ 43.7	14%
Annual Fare Revenue ($ millions)	$ 16.5	$ 18.4	12%
2 PERFORMANCE TARGETS			
AM Peak Hour Ridership			
– From North Shore (origin)	4,850	5,220	8%
– From North Shore (STP Target for 2005)	--	5,600	15%
– To North Shore (destinations)	2,420	2,890	19%
– Total to/from North Shore	7,270	8,110	12%
• Annual Ridership to/from North Shore (millions)	10.0	11.2	12%
• Annual New Transit Trips (millions)***	--	1.1	
• Rides per Service Hour	27.2	25	-8%
• Cost per Ride	$ 3.85	$ 3.89	1%
• Cost per New Ride	--	$ 4.45	
• Cost Recovery	43%	42%	-1%
AM Peak Hour Transit Market Shares**			
• Trips within North Shore	6.2%	6.9%	
• North Shore to Downtown Vancouver	34.9%	35.8%	
• North Shore to Burnaby Metrotown	6.3%	8.8%	
• North Shore to Lonsdale	9.8%	11.3%	

Notes:

* *Total service hours includes North Shore Buses only*

** *Total cost includes bus operating and debt service costs*

*** *Net annual new transit trips attracted in GVRD as a whole*

**** *Includes SeaBus ridership*

The expected cost per transit trip on the North Shore will be $3.89 by 2003, as compared to the current average cost per bus trip of $3.00 region-wide. This cost comparison indicates that the plan will be reasonably cost-effective overall. Because ridership will increase as new service is added cost recovery is expected to drop slightly from 43% to 42%.

Customer satisfaction ratings for transit services on the North Shore are already very high. However, key customer satisfaction ratings that will be affected by the recommended improvements to North Shore area bus service in 2001-2003 are expected to be further improved for the following measures: direct routes/few transfers; frequency of service; good connections with a reasonable wait time; and overcrowding. It is reasonable to expect that at the end of Year 3, customer satisfaction ratings would improve for both West Van and North Vancouver as shown in the table below. Ratings regarding SeaBus overcrowding will also improve from a current rating of 8.1 to 8.5 or better.

The transit ridership and customer satisfaction targets described above will be monitored and reported on regularly over the next three years, and will be used to identify adjustments to specific services and resource levels that may be needed.

Rider Satisfaction Ratings and Targets

Qtr 1 2000 Rider Satisfaction Ratings			Performance Targets					
			4th Qtr/2001		4th Qtr/2002		4th Qtr/2003	
	West Van.	North Van	West Van.	North Van	West Van.	North Van	West Van.	North Van
Direct Routes/Few Transfers	9.1*	8.5	9.1	8.5	9.1	8.6	9.1	8.7
Frequency of Service	7.6	7.4	7.6	7.4	7.6	7.5	7.6	7.6
Good Connections/ Reasonable Wait Time	8.1	7.9	8.1	7.9	8.1	7.9	8.2	8.0
Overcrowding	8.0	7.6	8.0	7.7	8.0	7.8	8.0	7.9

** All ratings are out of a possible score of 10*